473699 - ALFENTANIL INDUCED ELECTROCORTICOGRAPHIC ACTIVATION: A PROMISING TOOL FOR PRESURGICAL EVALUATION OF TEMPORAL LOBE EPILEPSY (TLE) PATIENTS

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Introduction: High doses of short-acting opioids, including alfentanil have been shown to activate electrocorticographic (ECoG) epileptiform discharges in patients with TLE, undergoing epilepsy surgery¹. However, the utility of this activation has been questioned as a result of the non-specific activation of non-epileptogenic tissues². There is a paucity of data regarding alfentanil activation in the pre-surgical localization of epileptogenic foci³. The aim of our study was to determine the electrographic effects of small dose of alfentanil (10 mcg/kg) in patients undergoing intracranial recordings for the pre-surgical work up of their bitemporal epilepsy. Our specific questions were: 1) can low doses of alfentanil induce activation, and 2) if so, can the activation reliably predict the side of the seizure focus in those with bitemporal epilepsy.

Methods: After IRB approval for data collection, 5 consented patients with bitemporal epilepsy participated in the study. All the patients had previously inserted bilateral subdural and intracranial depth electrodes for continuous recording of ECoG to capture spontaneous seizure activity. Subsequently, the present study was conducted in the operating room just before the removal of the electrodes under neurolept anesthesia. After IV access, standard monitoring and oxygen via face mask, baseline ECoG were recorded for five minutes. The patients were then given 10 mcg/kg of alfentanil over 20 seconds. Vital signs and ECoG were recorded for 5 minutes and all the patients were asked to report any abnormal sensation or aura during the study period. At the end of five minutes, all patients were given further analgesia and sedation to allow removal of electrodes. Recordings were stored digitally and later analyzed by a neurologist.

Results: All five patients enrolled in this study had successful lateralization of their seizure focus prior to these recordings. Alfentanil activated inter-ictal spikes in all the patients studied. In three patients electrocorticographic seizures were induced, two of which were associated with subjective symptoms of their usual aura. No clinical seizures were observed. In all patients, the side activated by alfentanil corresponded to the side identified to be their seizure focus and the side upon which they were offered resective surgery. (Table 1)

Discussion: This preliminary report unequivocally shows that alfentanil 10 mcg/kg IV bolus induces electrographic epileptiform discharges on the side that produces clinical seizures. Therefore, our results demonstrate for the first time that alfentanil-induced electrographic activity can be a promising tool for presurgical identification and localization of epileptogenic foci in TLE patients

References: 1. Anesth. Analg. 1999; 88 (5): 1101-6. 2. Epilepsia. 2001; 42 (2): 220-5

3.Brain Research Reviews 2000; 32(1): 316-27.

Electrocorticographic activation

	Age (yrs)	MRI Finding	Alfentanil activation			Seizure Localization
1	21	Normal	Yes	Left		Left
2	33	Bilateral mesial sclerosis	Yes	Right	ECoG seizure, Aura	Right
3	41	Bilateral mesial sclerosis	Yes	Left	ECoG seizure, Aura	Left
4	56	Bilateral mesial sclerosis	Yes	Right	ECoG seizure, Aura	Right
5	32	Normal	Yes	Left & Right		Left &Right